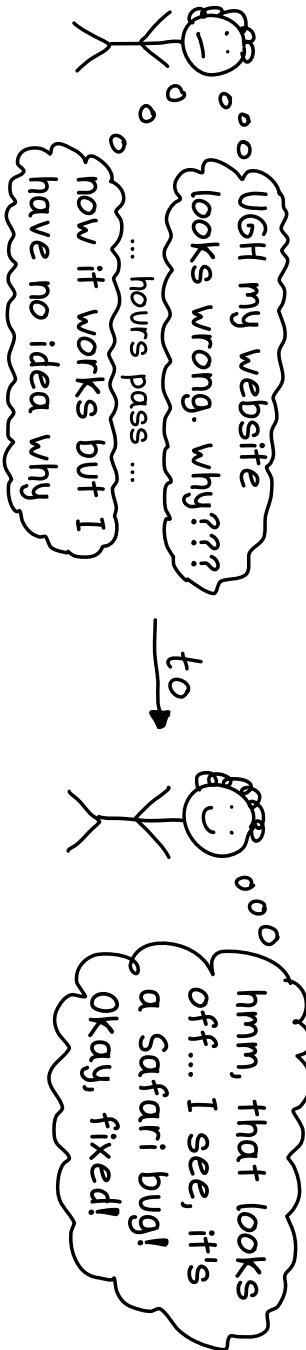


o this?
more at
★ wizardzines.com ★

What's this?

I wrote this zine because, after 15 years of being confused about CSS, I realized I was still missing a lot of basic CSS knowledge. Learning the facts in this zine helped me go from:



This zine also comes with 'examples' for you to try out. They're at:

<https://css-examples.wizardzines.com>

Panels which have examples you can try are labelled



thanks for reading

CSS is a HUGE topic and there's a lot more to learn than what's in this zine. Here are some of my favourite CSS resources:

Q CSS Tricks (css-tricks.com)

Hundreds of helpful blog posts and incredible guides, like their guides to centering & flexbox.

Q Can I use... (caniuse.com)

Tells you which browser versions (and what likely % of your users) have support for each CSS feature.

Q W3 (w3.org/TR/CSS)

The CSS specifications. Can be useful as a reference tool!

My favourite reference for CSS, JS, HTML, and HTTP

credits

Cover art: Vladimir Kašiković

Editing: Dolly Lanuza, Kamal Marhubi

Technical review: Melody Starling
and thanks to all the beta readers ☺

testing checklist

26

Finally, it's important to test your site with different browsers, screen sizes, and accessibility evaluation tools.

browsers	sizes	accessibility
<input type="checkbox"/> Chrome	<input type="checkbox"/> small phone (~300px wide)	<input type="checkbox"/> colour contrast
<input type="checkbox"/> Safari	<input type="checkbox"/> tablet (~700px)	<input type="checkbox"/> text size
<input type="checkbox"/> Firefox	<input type="checkbox"/> desktop (~1200px)	<input type="checkbox"/> keyboard navigation
<input type="checkbox"/> maybe others!		<input type="checkbox"/> works with a screen reader



performance

- fake a slow/high latency network connection!

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CSS isn't easy

4

CSS seems simple at first

```
h2 {  
    font-size: 22px;  
}
```

ok this is easy!

the spec can be surprising

setting overflow: hidden; on an inline-block element changes its vertical alignment

weird!

all major browsers have a CSS inspector usually you can get to it by right clicking on an element and then "inspect" there are extra steps

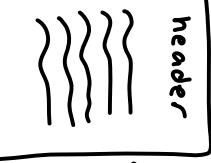
see computed styles

here's a website with 12000 lines of CSS, what font-size does this link have?

12px, because of x.css line 436

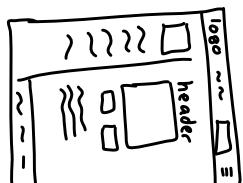
browser

and it is easy for simple tasks



a layout like this is simple to implement!

but website layout is not an easy problem



this needs to adjust to so many screen sizes!

and all browsers have bugs

I don't support flexbox for <summary> elements

ok fine

CSS is gonna take time if I'm patient I can fix all the edge cases in my CSS and make my site look great everywhere!

the CSS inspector

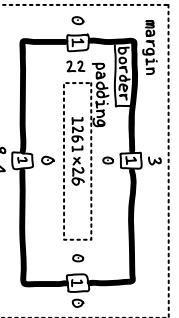
edit CSS properties

```
element { ← lets you change this  
          element's properties }  
  
button {  
    display: inline-block;  
    color: var(--orange);  
}  
  
button {  
    display: inline-block;  
    border: 1px solid black;  
}  
this lets you change the border of every <button>!
```

25

look at margin & padding

▼ Box Model



... and LOTS more

different browsers have different tools! For example, Firefox has special tools for debugging grid/flexbox

media queries

24

media queries let you use different CSS in different situations

```
@media (print){  
    footer {  
        display: none;  
    }  
}
```

CSS to apply

```
max-width & min-width  
@media (max-width: 500px) {  
    // CSS for small screens  
}  
@media (min-width: 950px) {  
    // CSS for large screens  
}
```

accessibility queries

you can sometimes find out a user's preferences with media queries

examples:

```
prefers-reduced-motion: reduce  
prefers-color-scheme: dark
```

you can combine media queries

it's very common to write something like this:

```
@media screen and  
(max-width: 1024px)
```

the viewport meta tag

```
<meta name="viewport"  
content="width=device-width,  
initial-scale=1">
```

Your site will look bad on mobile if you don't add a tag like this to the <head> in your HTML. Look it up to learn more!

print and screen

screen is for computer/
mobile screens
print is used when
printing a webpage
there are more: tv, tty,
speech, braille, etc

5

CSS != design

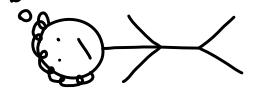
web design is really hard

wow, forms are way more complicated than I thought



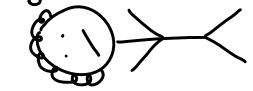
writing CSS is also hard

ok how exactly does flexbox work again?



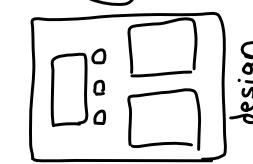
remember that they're 2 different skills

hm, I have NO IDEA what I want this site to look like, maybe that's my problem and not CSS

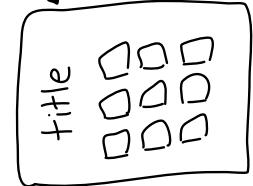


sketching a design in advance can help!

I can make it look like that!



even a simple sketch can help you think!



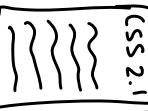
CSS

specifications

6

CSS has specifications

hello, this is how max-width works in excruciating detail



major browsers usually obey the spec

but sometimes they have bugs


oops, I didn't quite implement that right...



it's called "CSS 2" and I still like to reference it to learn the basics

there used to be just one specification

today, every CSS feature has its own specification

you can find them all at <https://www.w3.org/TR/CSS/>

there are dozens of specs, for example: colors, flexbox, and transforms

levels

CSS versions are called "levels".

new levels only add new features. They don't change the behaviour of existing CSS code

new features take time to implement

 <https://caniuse.com> 

can tell you which browser versions support a CSS feature

transitions

23

new styles change the element instantly...

2 ways this can happen:

① pseudo-classes (like :hover)

② Javascript code
el.classList.add('x')

```
a:hover {  
  color: red;  
}  
the element will turn red right away
```

... unless you set the transition property

```
a {  
  color: blue;  
  transition: all 2s;  
}  
a:hover {  
  color: red;  
    
  from blue to red over 2s  
}
```

 TRY IT 

not all property changes can be animated...

list-style-type: square;

I don't know how to animate that, sorry!

 CSS renderer

transition has 3 parts

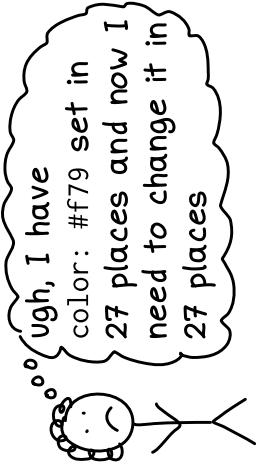
transition: color 1s ease;

which CSS properties duration timing function to animate

CSS variables

22

duplication is annoying



define variables in any selector

```
body {  
    --text-color: #f79;  
}  
#header {  
    everything  
    --text-color: #c50;  
}  
#header  
    applies to children  
of #header
```

do math on them with calc()

```
#sidebar {  
    width: calc(  
        var(--my-var) + 1em  
    );  
}
```

use variables with var()

```
body {  
    color: var(--text-color);  
}  
variables always  
start with --
```

changes to variables apply immediately

```
set --text-color  
to red  
ok everything  
using it is  
red now!  
JS  
CSS  
renderer
```

backwards compatibility

7

this makes CSS hard to write...

```
why are CSS  
units so weird?  
let me tell you  
a story from 20  
years ago...  
I spent DAYS getting  
this CSS to work  
I'll make sure it  
keeps working  
forever!
```

... but it means it's worth the investment

if you don't follow the standards, you're not guaranteed backwards compatibility

```
my site broke!  
Oh yeah, Firefox  
dropped support for  
that experiment
```

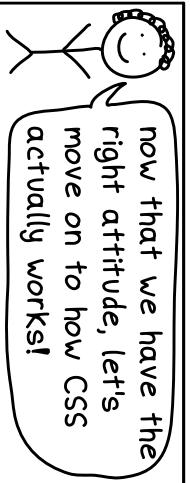
your CSS doesn't have to support browsers from 1998

```
just test that your  
CSS works on the  
browsers that your  
users are using!
```

newer features are often easier to use what people expect from a website has changed a LOT since 1998. Newer CSS features make responsive design easy

a few CSS selectors

8



`div`

matches `div` elements
`<div>`

`div.button`

match every `.button` element
 that's a descendent of a `div`

`div.button`

match `div`s with class "button"

`#welcome`

matches elements by id
`<div id="welcome">`

`.button`

matches elements by class
``

`div > .button`

match every `.button` element
 that's a direct child of a `div`

`:checked`

matches if a checkbox or
 radio button is checked

`a:hover`

matches a elements that
 the cursor is hovering over

`[href^="http"]`

match a elements with a href
 attribute starting with http

`tr:nth-child(odd)`

match alternating `tr` elements
 (make a striped table!)

Stacking contexts

21

a z-index can push
 an element up/down...

`.first {`

`z-index: 3;`

`.second {`

`z-index: 0;`

```

}           .first
}           
```

a stacking context is
 like a Photoshop layer

"two
layers"

by default, an element's
 children share its
 stacking context

... but a higher z-index
 doesn't always put an
 element on top

`z-index: 2`

`z-index: 10`

`z-index: 0`

is on top!

TRY IT!

every element is in
 a stacking context

these 2
elements
are in
different
stacking
contexts

setting z-index creates
 a stacking context

```

#modal {
  z-index: 5;
  position: absolute;
}
  
```

this is a common way to
 create a stacking context

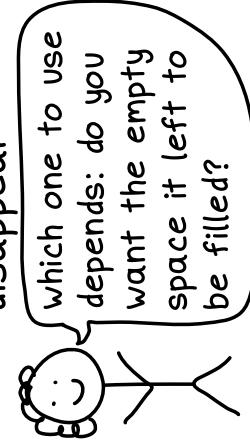
stacking contexts
 are confusing

You can do a lot without
 understanding them at all.
 But if z-index ever isn't
 working the way you expect,
 that's the day to learn
 about stacking contexts :)

hiding elements

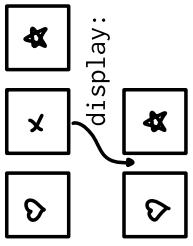
20

there are many ways to make an element disappear



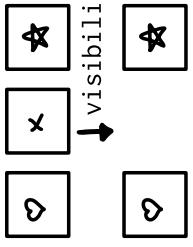
display: none;

other elements will move to fill the empty space



visibility: hidden;

the empty space will stay empty



opacity: 0;

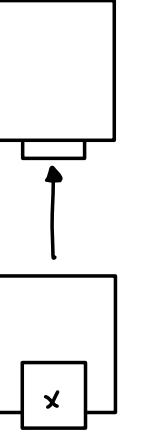
how to slowly fade out

```
#fade:hover {  
    transition: all 1s ease;  
    visibility: hidden;  
    opacity: 0;  
    set the opacity just so that the transition works  
}
```

like visibility: hidden, but you can still click on the element & it'll still be visible to screen readers. Usually visibility: hidden is better.

TRY ME!

z-index sets the order of overlapping positioned elements



TRY ME!

Q

TRY ME!

CSS can mix properties from different rules

```
a:visited {  
    color: purple; if(! use this  
    font-size: 1.2em; font-size  
}  
#start-link {  
    but use this  
    color: orange; #start-link is  
    more specific  
}
```

specificity

CSS uses the "most specific" selector that matches an element

In our example, the browser will use color: orange because IDs (like #start-link) are more specific than pseudoclasses (like :visited)

different rules can set the same property

```
a:visited {  
    color: purple; which  
    font-size: 1.2em; one gets  
}  
#start-link {  
    color: orange;  
}
```

loses to

how CSS picks the "most specific" rule

```
a selector with .classes  
or :pseudoclasses  
.sidebar .link {  
    color: orange;  
}
```

loses to

```
an inline style  
style="color: green;"  
loses to  
an !important rule*  
color: blue !important;
```

! important is very hard to override, which makes life hard for your future self!

default stylesheets

10

every browser has a

default stylesheet

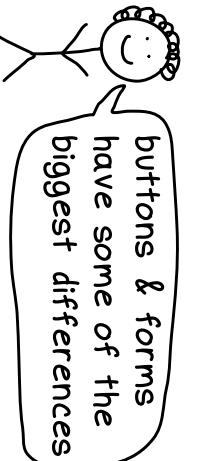
(aka "user agent stylesheet")

a small sample from the

Firefox default stylesheet:

```
h1 {  
    font-size: 2em;  
    font-weight: bold;  
}
```

different browsers have different defaults



Firefox's default stylesheets are at:
[resource://gre-resources/](http://gre-resources/)

every property also has a default "initial value"

the initial value (defined in the spec) is what's used if no stylesheet has set anything. For example, background-color's initial value is transparent

a CSS property can be set in 5 ways

- ① the initial value
- ② the browser's default stylesheet
- ③ the website's stylesheets
- ④ a user stylesheet (least common)
- ⑤ inline styles set with HTML/JS

lowest priority

position: absolute

19

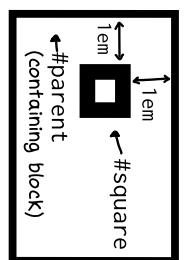
position: absolute; doesn't mean absolutely positioned on the page: it's relative to the "containing block"

the "containing block" is the closest ancestor with

a position that isn't set to static (the default value), or the body if there's no such ancestor.

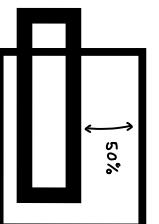
Here's some typical CSS:

```
#square {  
    position: absolute;  
    top: 1em; left: 1em;  
}  
#parent {  
    position: relative;  
}
```



top, bottom, left, right will place an absolutely positioned element

```
top: 50%;  
bottom: 2em;  
right: 30px;  
left: -3em;
```



highest priority

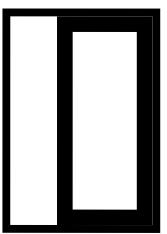
absolutely positioned

elements are taken out of the normal flow

will a parent element expand to fit an absolutely positioned child?

left and right borders are both 0px away from containing block

the box sticks out because width doesn't include borders by default



```
left: 0; right: 0; ≠ width: 100%;  
width: 100%;
```

centering

18

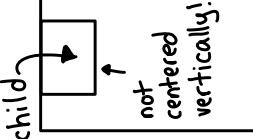
center text with
text-align

```
h2 {  
    text-align: center;  
}
```

center block elements
with margin: auto

```
example HTML:  
<div class="parent">  
  <div class="child">  
  </div>  
</div>
```

margin: auto
only centers horizontally



```
.child {  
    width: 400px;  
    margin: auto;  
}
```

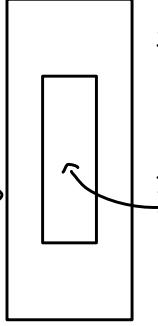
vertical centering is easy with flexbox or grid
here's how with grid:

```
.parent {  
    display: grid;  
    place-items: center;  
}  
  
.child {  
    margin: auto;  
}
```

TRY ME!

it's ok to use a flexbox
or grid just to center
one thing

```
.parent {  
    display: grid;  
}  
  
.child {  
    margin: auto;  
}
```



units

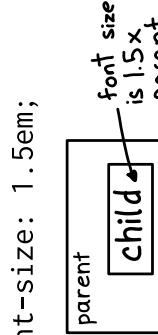
CSS has 2 Kinds of units:
absolute & relative

absolute: px, pt, pc,
in, cm, mm

relative: em, rem,
vw, vh, %

rem
the root element's
font size

1rem is the same
everywhere in the
document. rem is a
good unit for setting
font sizes!



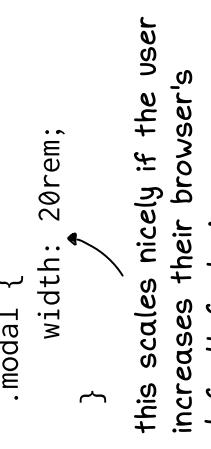
0 is the same
in all units

```
.btn {  
    margin: 0;  
}
```

also, 0 is different from none.
border: 0 sets the border width
and border: none sets the style

1 inch = 96 px
on a screen, 1 CSS "inch"
isn't really an inch, and
1 CSS "pixel" isn't really
a screen pixel.
look up "device pixel
ratio" for more.

```
.modal {  
    width: 20rem;  
}
```



this scales nicely if the user
increases their browser's
default font size

inline vs block

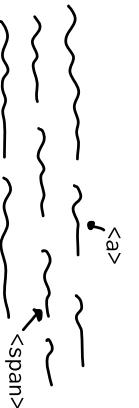
12

HTML elements default to inline or block

example inline elements:

```
<a> <span>
<p> <div>
<strong> <i>
<ol> <ul> <li>
<h1> - <h6>
<img> <q>
<blockquote>
<code>
<pre>
```

inline elements are laid out horizontally



block elements are laid out vertically by default

example block elements:

```
<div>
<p>
```

TRY!

to get a different layout, use display: flex or display: grid

inline elements ignore width & height*

Setting the width is impossible, but in some situations, you can use line-height to change the height

* img is an exception to this: look up "replaced elements" for more

display can force an element to be inline or block

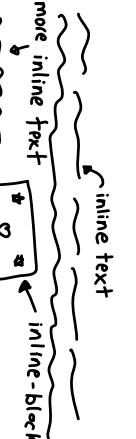
display determines 2 things:

① whether the element itself is inline, block, inline-block, etc

② how child elements are laid out (grid, flex, table, default, etc)

display: inline-block; TRY!

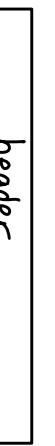
inline-block makes a block element be laid out horizontally like an inline element



CSS grid: areas!

17

let's say you want to build a layout



grid-template-areas lets you define your layout in an almost visual way

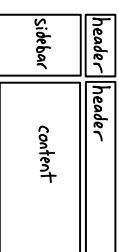
grid-template-areas:

"header header"

"header header"

"sidebar content";

I think of it like this:



1. write your HTML



```
<div class="grid">
<div class="top"></div>
<div class="side"></div>
<div class="main"></div>
</div>
```

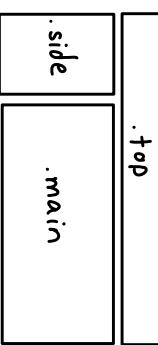
2. define the areas

```
.grid {
  display: grid;
  grid-template-columns:
  200px 800px;
  grid-template-areas:
  "header header"
  "sidebar content";
}
```

3. set grid-area

```
.top {grid-area: header}
.side {grid-area: sidebar}
.main {grid-area: content}
```

result:



flexbox basics

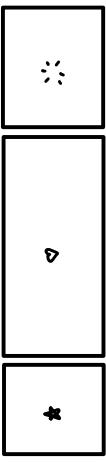
16

display: flex;

TRY ME!
set on a parent element
to lay out its children
with a flexbox layout.

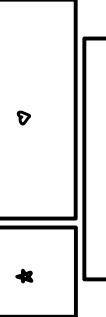
by default, it sets
flex-direction: row;
flex-direction: column

flex-direction: row;



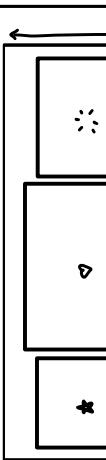
by default, children are
laid out in a single row.
the other option is
flex-direction: column

justify-content: center;



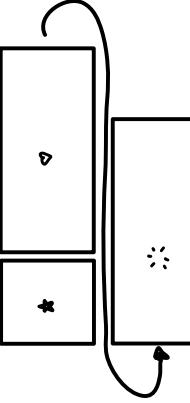
horizontally center
(or vertically if you've set
flex-direction: column)

align-items: center;



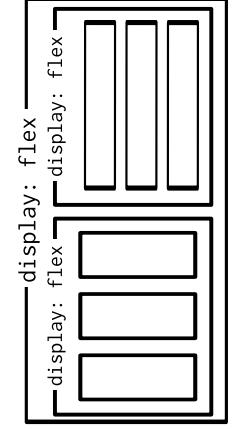
vertically center (or
horizontally if you've set
flex-direction: column)

flex-wrap: wrap;



will wrap instead of shrinking
everything to fit on one line

you can nest flexboxes

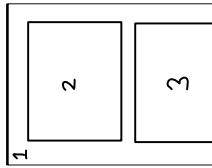


the box model

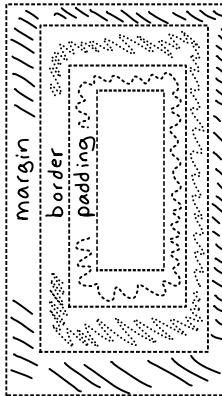
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TRY ME!
every HTML element
is in a box

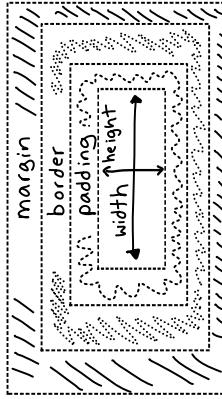
```
<div class="1">  
<div class="2" />  
<div class="3" />  
</div>
```



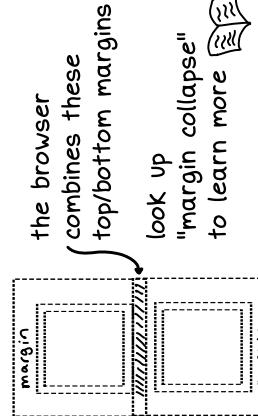
boxes have padding,
borders, and a margin



width & height don't
include any of those

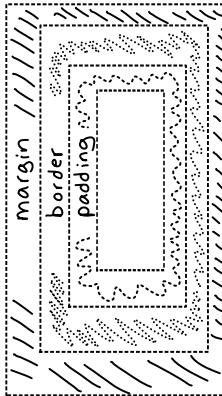


TRY ME!
margins are allowed
to overlap sometimes



the browser
combines these
top/bottom margins
look up
"margin collapse"
to learn more

box-sizing: border-box;
includes border + padding
in the width/height



padding & border are
inside the element,
margin is outside

For example, clicking on an
element's border/padding
triggers its onclick event,
but clicking on the margin
doesn't.

padding + margin syntax

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there are 4 ways
to set padding
all sides

padding: 1em;
vertical horizontal
padding: 1em 2em;
top horizontal bottom
padding: 1em 2em 3em;
top right bottom left
padding: 1em 2em 3em 4em;

differences between padding & margin

→ padding is "inside" an element: the background color covers the padding, you can click padding to click an element, etc. Margin is "outside".

tricks to remember
the order

① trouble
top right bottom left
② it's clockwise - 

margin syntax is the same as padding

padding on just 1 side
padding-top: 1em;
padding-right: 10px;
padding-bottom: 3em;
padding-left: 4em;

borders

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border has 3 components

border: 2px solid black;

is the same as

border-width: 2px;
border-style: solid;
border-color: black;

border-style options

solid

dotted

dashed

double

+ lots more
(inset, groove, etc)

border-{side}
you can set each side's border separately:

border-bottom:
2px solid black;

outline

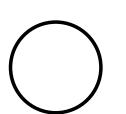
outlines on :hover/:active help with accessibility: with keyboard navigation, you need an outline to see what's focused

border-radius lets you have rounded corners

border-radius: 10px;

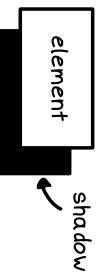
border-radius: 50%;
will make a square
into a circle!

border-radius: 10px;



border-radius: 50%;
will make a square
into a circle!

box-shadow
lets you add a shadow to any element



box-shadow: 5px 5px 8px black;
x offset y offset blur radius